

INDEX.

ILLUSTRATIONS.

A

Amalgamator (Barker) 97
Anchor-tripper (Higgins) 200
Andiron (Logan) 373
Auger (Blake) 373

B

Bod bottom (Hatch) 49
Beehive (Underhill) 56
Beer-cooling apparatus (Baudet) 40
Belt-fastener (Blake) 373
Blind-wiring machine (Davies) 104
Bolt, catch (Salisbury) 34
Brake for street railroads (Jenks & Stearns)

C

Brake, self-acting (Dutch) 230
Brake, wagon (Brown) 165
Boat-lowering apparatus (Davidson) 221
Boiler, steam (Armstrong) 332
Box, journal (Bryant) 64
Boxer, machine for making packing (Palmer) 130
Brush, scraping and scrubbing (Tusch)

D

Ruckle, saw (Crosby) 102
Burrer, gas (Thompson) 335
Calipers (Sutton) 192
Car, freight (Billings) 208
Car, gravel (Hendry) 159
Carriage seat (Harris) 32
Churn (Fitch) 223
Churn (Holmer) 149
Condenser and heat-reclaimer, surface (Fletcher) 289
Cooker, steam (Devendorf) 30
Corkscrew (Byrn) 284
Cotton-masher (Chichester) 145
Coupling, hose (Singer) 106
Coupling, hose (Smith) 176
Cracker machine (Fox) 393

E

Detector and alarm (Grimshaw) 353
Detonating machine (Burley) 193
Dredging machine (Bureau) 329
Drill stock, quick action (Fress) 69
Eel-skinning machine (Emelhof) 99
Elevator (Bower) 132
Engine, oscillating (Mackintosh) 312
Engine, steam fire (Kettering & Edmond)

F

Engine, steam fire (Lee & Larned) 235
Engine, steam fire (Sillaby, Mynders & Co.) 129
Engines, oscillating piston (Runkel) 1, 273
Engines, stationary and portable (Blanchard) 373, 376
Envelope-opener (Pheips) 193
Excavator, steam (Goodale & Marsh) 53
Fire-escape hook and ladder truck (Mickle & Carville) 250
Fire-escape, the London (—) 244
Former, tin plate (Olmsted) 339
Fresh-water apparatus (Normandy) 257
Furnace (Duhime) 344

G

Gas apparatus (Wilson) 354
Grain-binder (Durkee) 253
Gridiron (Treadwell) 113
Harrow and seed-sower (Hewitt) 308
Harrow, vibrating (Patterson) 59
Harvester (Brown & Bartlett) 334
Harvester (Luther) 48
Harvester (Stevens) 160
Handle for stove covers (Donald & Harts-horn) 128

H

Hay-maker (Goff) 216
Hay-maker (Stoddard) 248
Head-cutting barrel (Manning) 51
Hemmer (Clark) 220
Hook, cant (Hinds) 192
Hoop for cotton bales, iron (Butler) 93
Horse collar, apparatus for stuffing (Habberton) 72
Horse-shoe (Gorton) 376
Horse-shoe (Gorton) 224
Hygrometer (Ullman) 24

I

Inkstand, self-closing (Ender) 133
Keel for ships, slide (Mackell) 4
Knife-cleaner (McNamey) 72
Knife-cleaner (Frost) 330

L

Lamp and match-box (Shanks) 52
Lamp, gas (Greene) 224
Lamp, kerosene (Von Bonhorst) 208
Lath, turning (Sellers) 322
Leg, artificial (Douglas) 240
Locomotive, marine (Hopkins) 112
Looms, warp regulator for (Conant) 406

M

Machinery department of the Fair of the American Institute (—) 8
Melodious (Lane & Manning) 196, 336
Mill, grist (Buckingham) 340
Mill, grinding (Munson) 390
Millstones, dressing (Yarborough) 197
Motion, method of changing (Hathaway) 206

N

Nozzle for hose pipes (Roberts) 176
Oven, baking (Kaczynski) 336

P

Palace Home, the New York (—) 35
Pendulum, compensating (Bemis) 96
Pipe-nippers (Smith) 43
Plaster (Gray & Woods) 88
Planing machine (Stearns & Coffin) 206
Planter, corn (Heller) 29
Planter, corn (Worth) 244
Plane, drain (Lane) 116
Plover, mold (Hammond) 138
Plover, shovel (Lee) 164
Plover, steam (Hawkins) 65
Plover, universal (Goch) 405
Pot, coffee (Devendorf) 30
Press, cotton (Hend) 6
Press, hay (Miller) 229

Press, paper and job printing (Degener) 265
Pump (Lloyd) 363

Q

Quartz-crusher (Brown) 330

R

Rag-picker (Storm) 177
Railroad joint and spike (Dayley) 31
Rake, horse (Stoddard) 248
Refrigerator (Baker) 400
Register, hot-air moistening (McNeill) 264
Regulator, gas (Wheeler & Wilson) 376
Retort, mouth-piece for clay (Kennedy) 296

S

Sawset (Brooks) 108
Seeding machine (Markham) 184
Separator, gold (Bourne) 113
Shade-supporter (Shaw) 196
Shaving-machine (Skinner) 344
Shingle machine (Hall & Stewart) 17
Shingle machine (Morrison) 40
Shoe, ventilating (McEwen & Patterson) 292
Skate, automatic (Joseph) 152
Skate, magic (Whitman) 16
Soda-water apparatus (Walker) 364
Stave-jointer (Little) 280
Stave-jointer machine (Holmes) 233
Stave-jointer (Holmes) 233
Stave machine (Decker) 305
Steamship (Herbert) 308
Stove, ship's (Slater) 388

T

Trap, air (Sault) 324
Trap, moth (Hearst) 261
Trap, steam (Douglas) 130
Trap, steam (Lapham) 224
Tensoning machine (Dole) 184

V

Valve, anti-friction (Bristol) 380
Valve, variable cut-off (Buckingham) 327
Valve, water-escape (Douglas) 304
Vise and swivel (Allen) 143
Villa, front elevation of a country (Sauter & Volk) 116

W

Washing machine, the Shaker (Parker) 179
Watch regulator (Gordon) 64
Watch regulator (Merchon) 300
Windmill, power-accumulating (Lum) 241
Wheel, water (Rose) 168
Wheel, water (Smith) 168
Wrench (Bell) 104

MISCELLANY.

A

Accident, a singular 185
Advertisements 14, 33, 47, 63, 78, 93, 110, 126, 142, 158, 175, 190, 206, 222, 238, 254, 270, 287, 303, 319, 334, 351, 367, 383, 398
Almanac 245
American Institute Fair, machinery department of the late 9
American Institute, Polytechnic Association of the 64, 83, 98, 114, 134, 156, 172, 188, 215, 231, 247, 263, 274, 290, 310, 327, 343, 359, 375, 391, 405
American Institute, the 168
Ammonia, a new method of manufacturing 21
Announcement, an extraordinary 353
Announcement of Scientific Discovery (for 1890), Wells' 118
Appetite, the instinct of 294
Architecture, American naval 131, 132, 214, 258, 274, 303, 323, 338, 374, 412
Architecture, English on, our naval 131
Architecture in the Holy Land 357
Architecture of Great Britain, naval 208, 354
Areometer for determining the real density of liquids, a new 213
"Are you insured?" 54
Astronomers, France on American 150
Astronomy, a chance to make an original observation in 160
Aurora borealis and aurora australis, complete description of the 164
Axes without eyes 378

B

Banks of the United States, the 117
Beams, strength of wrought iron 74
Bee, the hexagonal cell of the honey 310, 325, 342
Bell for San Francisco, large steel fire 102
Belts for driving machinery 84
Bishop, ex-commissioner 122, 136
Boiler explosion—rotten iron 37
Boiler incrustations 132, 292
Boiler inspection, city 4, 208, 339
Boilers, horse-power of 93
Boilers and periodicals received, new 318, 364, 392
Bonanza 322
Boreas, the Pacific 179
British Empire, area and population of the 263
Bridges, the obstruction to the navigation of the 263
Bridges, the obstruction to the navigation of the 263
Building scheme, magnificent 26
Burnings—fire-escapes 121
Business, an immense year's 25

C

Calamity, another awful 240
Calendar, the Lawrence 72, 136
Calculator, the lightning 277
Camera, Melhuish's metal 228
Cannon, manufacture of mammoth 26
Carding machine, the 305
Cattle disease in Massachusetts 277
Cemetery in winter, Greenwood 188
Clocks and watches, American 35
Clouds, dark 1
Coal for locomotives, economy of anthracite 197

D

* Figures followed by stars refer to illustrated articles.

Compasses to prevent attraction, arranging 163
Confidence, children's 250
Consumption and its causes 237
Controversy, the dictionary 244
Copper, Lake Superior 339
Copper, New Jersey 244

CONTEMPORARY INTELLIGENCE.

Beams for buildings, iron combination; by B. S., 260 and 248
Beams for drill rooms, iron; by Inquirer and B. S., 181
Bells, repairing cracked; by W. T. & J. G., 275
Bells, driving machinery; by P. and W. B., 194, T. McG., Jr., and D. E. C., 197, Inquirer, 227, and D. I., 337
Bodies falling through the air; by J. W., 305
Boiler explosions, preventing; by T. A., 196, and A. G. S., 278
Boiler incrustations; by J. W. H., 65, M. N. W., 101, and J. L. L., 160
Boys, science among the; by F. G., 214

Bridge, the great Washington aqueduct; by M. C. M., 86
Burning fluid and incensement houses; by M. F., 159
Carling and conching machines; by L. L. R., 222
Cave, a wonderful; by J. W. H., 211
Charlotta drawn by eagles, aerial; S. H. N., 292
Chimneys, curing smoky; by L. L. C., 179
Coal tar for trees; by A. H., M. J. W. M., 84, and F. W. E. and C. F. R., 119
Combustion in a flour mill, spontaneous; by C. D. G., 133
Correspondence, editorial; by —, 365, 298 and 309
Correspondence, our special; by E. M. R., 65, 83, 98, 115, and B., 356, 402
Correspondence, our western; by —, 336
Correspondence, Washington; by Churn 408

Cotton, cause of sanded; by E. J. C., 5
Cure, the; by G. W. C., 167
Egg-hatching machine; by W. J. C., 270, and W. B. Jr., 327
Egg-shell, philosophy in an; by J. W., 335, and R. W., 371
Electricity, plates with iron, coating; by R. W., 29
Engine, a steam and air; by E. R., 371
Engines, steam fire; by G. V. B., 227
Engines, a common error among; by D. S., 135
Fighting on steel; by L. W. A., 245
Fair at Baton Rouge, agricultural; by J. A. D., 68
Files by machinery, cutting; by M. D. W., 180
Fishing-net machine wanted, a cheap; by R. G., 278
Fishing-rod wanted, an improved; by O. W. S., 250
Fire-escapes; by W. H. W., 274
Fuel for steamers, oil; by J. E. H., 67
Fuel in engines, economy of; by W. B. R., 68
Gearing, frictional; by H. F. S., 53
Gin, wanted—a cotton; by L. S. C., 246, J. D. C., 278, H. W. H. and A. J. H., 232, and H., 377
Gizzard, a pipe made in a chicken's; by R. C. N., 295
Guns, the "scattering" of shot; by J. F., 194
Gutta-serena, changes in; by R. U. P., 74
Heat by the earth, radiation and absorption of; by E. R., 116
Heat, latent; by A. F. W., 150
Hose for steam, elastic; by T. A. M., 119
Household conveniences, our modern; by C. M. W., 373
Houses, tenement; by J. A. D., 179
India-rubber, dissolving; by L. W., 29
Invention, a Cuban; by J. D., 371
Inventions, a woman pleads for new; by Mrs. M. L. Varney, 279
Inventions for women; by E. M. R., 338
Inventor sensitive about his name, an; by H. B. H., 345
Inventors, a chance for; by A. J. H., 212
Inventors, a crumb for; by M., 330
Inventors by government, treatment of; by a Subscriber, 327
Inventors, successful; by R. S. S., 74, and J. L., 86
Inventors, telegraph; by G. M. P., 405
Leather, defects of calf-skin; by M., 193
Letters, testimonial; by various persons, 7, 35, 214, 273 and 279
Linen and flax; by O. S. L., 119
Locomotives in South America, trial of; by C. F. P., 245
Locomotives, magnetized wheels of; by L. A. B., 118
Lungs? can particles of matter be inhaled into them; by E. T. C., 227
Manacled, American; by E. H. M., 328
Manure, improving farms without; by G. B., 329
Matches, inferior; by F. F. M., 101
Meteorology in the cellar; by J. W., 228, and W. S. T., 299
Mill-picks, experience in tempering; by F. S. S., 180
Millstones, the use of diamonds for; by H. L., 194, and J. G., 243
Mill, the Pemberton; by O. B. M., 261
Mills and milling, grist; by W. M., 307, and I. B., 371
Milking by machinery; by L. O. C., 337
Mines, ventilation of; by R. A., 370
Motion, changing; by J. H., 336
Mules, cotton-spinning; by T. W., 295
Mysteries, one of the; by R. J. S., 192
Mystery, a meteoric; by W. D. S., 325
Oil and oil cake, lined; by E. T. C., 228, and W. S. T., 299
Oil for steamers, resin; by H. H. L., 23

Patent Office, the United States; by Scribe, 326
Patent rights; by J. W. H., 2
Patent, the force of a re-issued; by F. G. W., 260
Phenomena, curious optical; by E. S. B., 212
Phenomenon, a wonderful natural; by Medicus, 57
Photography, heat in; by W. J. T., 243
Plows, mole; by J. G. H., 198
Floving in Texas, steam; by D. M. R., 243
Retorts, clay; by Experience, 342
Roofs, construction of; by B. S., 86
Salt-works in Yucatan, rain-water; by L. E., 370
Sawdust satisfactorily, how to burn; by I. H. S., 71, N. D. L., 123, J. L., 230, and J. R., 278
Scale wanted, an improved weighing; by H. F. N., 115
Sewage in cities; by H. L., 163
Sewing by artificial light; by M. M., 99
Ships, history of iron; by W. T. G., 20
Ships, iron and wooden; by J. W. G., 214
Shipwreck, saving life in; by a Careful Reader, 150, and F. A. M., 182
Snakes; by M. C. T., 245
Stars suggested, a new grouping of the; by J. W. P., 340
Steam in cylinders, compression of; by E. B., 377
Steamship, the Winans; by R., 51
Steel in hardening, contraction of; by J. J., 119
Store wanted, a hot-bed; by W. B. W., 349
Stumps, pulling pine; by C. W. D., 371
Tanning, the chemistry of; by W. S. R., 31
Tanning, the profits of; by T. S., 229
Telescopes, American; by J. H. A., 275
Texas, agricultural capacities and climate of western; by D. S. H., 370
Tools, hardening edge; by D. W., 295
Trees, the winding of; by A. C. L., 262
Valve, Douglas's; by F. D., 328
Valves, check; by Archimedes, 261
Well-boring in quicksands and rocks, ancient; by J. T., 69
Wheel experiments at Philadelphia, the water; by O. H. P. P., 211
Willow, American basket; by G. J. C., 258
Wings, adulteration of; by A. S., 227
Wire for telegraph, steel; by W. & M., 229
Cotton trade, the British 193
Countries, size and population of the principal 252
Country-house, the plan of a 116
Currants, cork and raisins in California, cultivation of Dante 98

D

Daguerotype, the 299
Dead, burial of the dead 290
Decimal system of weights and measures, the 53
De Quincy, death of 5
Deterioration of the soil, cause of 358
Diamonds, usefulness of 84
Discovers batatas in England 100
Discoveries and inventions abroad 25, 148, 282, 299
Discoveries in Africa, latest 54
Discovery at Rome, remarkable 251
Disease, the cattle 354
Disinfectant, universal 1
Ditches, underground 101
Dye from coal tar, a beautiful 68
Dyspepsia and constipation 287

E

Electricity, velocity of 225
Electricity, recent discoveries in 256
Electric, vulcanite, solid 112
Engine, glass steam 120
Engine, the anatomy of the steam 203
Engine, the calorific 65, 121
Engines, our steam fire 21
Engines, the work and power of steam 324
Engineering, steam 299
Engineering precedents 57
Engraving on glass 253
Equisetum, a simple apparatus for illustrating the procession of the 200
Extension cases (see Patent extensions)

F

Fabrics waterproof, rendering textile 403
Factory, fall of a 63
Fences, iron 163
Fire-bricks 90
Fire-extinguisher, a new 390
Fire-escape 198, 240, 244
Food, idiosyncrasies of 16
Forces, the correlation and homogeneity of physical 403
Franklinite metal 18
Friction, Motion on 229, 335
Friends, our 292, 377
Gas-meters 149, 210
Gas, water 261
Garden, zoological and botanical 126, 202
Girders, testing of wrought iron 117
Grape rot, cause and prevention of 286
"Great Eastern" the 7
Green from buckthorn, Chinese 275
Green without arsenic, production of a copper 329
Gold, the purification of 196
Gums, discoveries in the composition of 228
Gut-cotton, 55

H

Hardware, what we pay to England for 404
Hay as cattle feed, damaged 136
Heat and the steam engine, latent 70
Historical society in New Mexico 261
Horse, nature carrying off a dead 301
Horse, stable management of a 136

I

Ice, artificial manufacture of 103
India, 413, 414
India-rubber stretched out at last 398

Industry—manufactures—commerce 155
171, 186, 203, 215, 235, 266, 282, 299, 323, 363, 390

INFORMATION, CIRCULARS.

Bail, the motion of a cannon 274
Books, circulation of government 25
Cool, how to burn 71
Cooking by the sun's rays 261
Eyes? can we see our own 243
Improvements, how to make 375
Jinks, receipts for making fancy 29
Invention, the way to manage an 297
Moon, peculiarities of the 323
Pipes by rule and compass, to cut elbows of stove 71
Place, the empty 68
Shades, loss of light by glass 210
Silver in the waters of the sea, the presence of 227
Stars, the way to tell the time of night by the 169
Steel, theory of the constitution of 6
Sue burn the air? does a red-hot 21
Sun-dial, plain directions for making a horizontal 96
Temperature of our bodies is regulated, the way the 59
Tobacco, some statistics of 54
Trees, a personal experience in transplanting 123
Wall, how to see through a brick 325
What ought to be known 274
Instruments, philosophical 211
Invention, an ingenious dental 378
Inventions, American 6
Inventions, foreign (see Discoveries and inventions abroad)
Inventions in Europe, American 246
Inventions to the public, abandonment of 165
Inventions, weekly summary of (American) 11, 26, 41, 68, 75, 90, 107, 122, 135, 154, 170, 187, 202, 219, 234, 250, 267, 282, 298, 315, 331, 346, 363, 378, 394, 409
Inventor, presentation of a gold snuff-box to an 249
Inventors, activity and industry of 317
Inventors, death of 158, 254
Inventor's experience in procuring an English patent, an 273
Inventors in one year, \$37,000 saved to 101
Iron and steel, extensive experiments to test the strength of 117, 180
Iron-making, history of the "hot blast" in 3
Iron-ware, white enameled cast 197

J

Japanese at the Patent Office, the 260
Japanese Embassy, the 324
Japanese—their proficiency in mechanics, agricultural sciences, &c., the 407

L

Law, new steamboat 241
LEADERS
Beams, strength of wrought iron 131
Boiler explosions, Colburn on 245
Bread-making 137
Buildings, defective public 105
Coal, the power of 169
Coloring of nature and art 297
Conductors, electrical 381
Engineering in 1890, steam 25
Fire-escapes 44
Gold, recovering lost 41
Guns, great 328
Lamp improvements, liberal prizes offered for 377
Law that cannot be executed, a 57
Magnets and magnetic attraction 251
Paper-making, improvements in 153
Railroad safety and brakes 59
Retrospect 407
Science and machines, agricultural 185
Science, progressive 5
Ships, wooden and iron 217
Shipping, the growth of our 265
Steamers, the Winans' 73
Steamships, the increase and improvement of 229
Traders and professions, health of 201
Type-setting machines, American 315
Watch manufacture 393
Leather-dealers and the Lynn strikers, the 517
Leather, defects of calf-skin 67, 127, 210
Lectures at New Haven, agricultural 118
Liabilities of companies for accidents 229
Lighting accidents (in 1829) 56
Light, the time 30, 178
Light without heat 276
Lights for lighthouses, electric 280
Locomotives, American and English 74
Locomotives on a "bender," English 74

M

Macaulay, death of 73
Macaulay's companions in the tomb, 207
Machinery, balancing 395
Machinery for the Amor river, American 170
Manure, drainage of cities for 24
Markets, New York 10, 37, 42, 63, 74, 107, 123, 138, 238, 314
Mason and the "Scientific American," the Hon. Judge 5
Measures, our 177
Metals, the expansion of 255
Mill, a practical inquiry into the cause of the fall of the Pemberton 163
Mill to be re-built, the Pemberton 163
Mineral wealth of Great Britain, 102
Mines and mining in Arizona, copper 39
Mines, explosion in coal 207
Money received, 14, 30, 45, 63, 73, 94, 110, 126, 142, 158, 174, 190, 206, 222, 238, 254, 270, 287, 303, 319, 334, 351, 367, 383, 398, 411

N

Motion, machinery for changing 70
Museums, public art 106
Mushroom bed, how to make 211

N

News and markets, foreign 10, 37, 42, 60, 75, 90, 106, 123, 135, 154, 170, 187, 203, 219, 234, 250, 266, 282, 298, 314, 330, 346
"Niagara," the frigate 4



ILLUSTRATIONS.

A

Amalgamator (Barker) 97
Anchor-tripper (Higgins) 200
Andiron (Logan) 373
Auger (Blake) 373

B

Bod bottom (Hatch) 49
Beehive (Underhill) 56
Beer-cooling apparatus (Baudet) 40
Belt-fastener (Blake) 373
Blind-wiring machine (Davies) 104
Bolt, catch (Salisbury) 34
Brake for street railroads (Jenks & Stearns)

C

Brake, self-acting (Dutch) 230
Brake, wagon (Brown) 165
Brake-lowering apparatus (Davidson) 221
Boiler, steam (Armstrong) 323
Box, journal (Bryant) 64
Boxer, machine for making packing (Palmer) 130
Brush, scraping and scrubbing (Tusch)

D

Ruckle, saw (Crosby) 102
Burrer, gas (Thompson) 335
Calipers (Sutton) 192
Car, freight (Billings) 208
Car, gravel (Hendry) 153
Carriage seat (Harris) 32
Churn (Fitch) 223
Churn (Holmer) 149
Condenser and heat-reclaimer, surface (Fletcher) 289
Cooker, steam (Devendorf) 30
Corkscrew (Byrn) 284
Cotton-masher (Chichester) 145
Coupling, hose (Singer) 106
Coupling, hose (Smith) 176
Cracker machine (Fox) 393

E

Detector and alarm (Grimshaw) 353
Detonating machine (Burley) 193
Dredging machine (Bureau) 329
Drill stock, quick action (Fress) 69
Eel-skinning machine (Emelhof) 99
Elevator (Bower) 132
Engine, oscillating (Mackintosh) 312
Engine, steam fire (Kettner & Edmond)

F

Engine, steam fire (Lee & Larned) 235
Engine, steam fire (Sillaby, Mynders & Co.) 129
Engines, oscillating piston (Runkel) 1, 273
Engines, stationary and portable (Dian-

G

Envelope-opener (Pheips) 193
Excavator, steam (Goodale & Marsh) 53
Fire-escape hook and ladder truck (Mickle & Carville) 250
Fire-escape, the London (—) 244
Former, tin plate (Olmsted) 339
Fresh-water apparatus (Normandy) 257
Furnace (Duhme) 344
Gas apparatus (Wilson) 354
Grain-binder (Durkee) 253
Gridiron (Treadwell) 113

H

Harrow and seed-sower (Hewitt) 308
Harrow, vibrating (Patterson) 59
Harvester (Brown & Bartlett) 324
Harvester (Luther) 48
Harvester (Stevens) 160
Handle for stove covers (Donald & Harts-

I

Iron, the instinct of 294
Architecture, American naval 131, 132, 214, 258, 274, 329, 333, 374, 412
Architecture, England on, our naval 131
Architecture in the Holy Land 357
Architecture of Great Britain, naval 208, 354
Areometer for determining the real density of liquids, a new 213
"Are you insured?" 54
Astronomers, France on American 150
Astronomy, a chance to make an original observation in 160
Aurora borealis and aurora australis, complete description of the 164
Axes without eyes 378

J

Keel for ships, slide (Mackell) 4
Knife-cleaner (McNamey) 72
Knife-cleaner (Frost) 320
Lamp and match-box (Shanks) 52
Lamp, gas (Greene) 224
Lamp, kerosene (Von Bonhorst) 208
Lath, turning (Sellers) 322
Leg, artificial (Douglas) 240
Locomotive, marine (Hopkins) 113
Looms, warp regulator for (Conant) 406

K

Machinery department of the Fair of the American Institute (—) 8
Melodious (Lane & Manning) 196, 336
Mill, grist (Buckingham) 340
Mill, grinding (Munson) 390
Millstones, dressing (Yarborough) 197
Motion, method of changing (Hathaway) 206

L

Nozzle for hose pipes (Roberts) 176
Ovens, baking (Kaczengio) 336
Palace Home, the New York (—) 35
Pendulum, compensating (Bemis) 96
Pipe-nippers (Smith) 43
Plaster (Gray & Woods) 88
Planting machine (Stearns & Coffin) 206
Planter, corn (Hillier) 23
Planter, corn (Worth) 144
Plane, drain (Lane) 216
Plover, mold (Hammond) 138
Plover, shovel (Lee) 164
Plover, steam (Hawkins) 65
Plover, universal (Groch) 405
Pot, coffee (Devendorf) 30
Press, cotton (Hend) 6
Press, hay (Miller) 229

M

Press, paper and job printing (Degener) 265
Pump (Lloyd) 363
Quartz-crusher (Brown) 330
Rag-picker (Storm) 177
Railroad joint and spike (Dayley) 31
Rake, horse (Stoddard) 245
Refrigerator (Baker) 400
Register, hot-air moistening (McNeil) 264
Regulator, gas (Wheeler & Wilson) 376
Retort, mouth-piece for clay (Kennedy) 296

N

Sawset (Brooks) 106
Seeding machine (Markham) 184
Separator, gold (Bourne) 113
Shade-supporter (Shaw) 196
Shaving-machine machine (Skinner) 344
Shingle machine (Hall & Stewart) 17
Shingle machine (Morrison) 40
Shoe, ventilating (McEwen & Patterson) 292
Skate, automatic (Joseph) 152
Skate, magic (Whitman) 16
Soda-water apparatus (Walker) 364
Stave-jointer (Little) 280
Stave-jointer machine (Holmes) 233
Stave-jointer (Holmes) 233
Stave machine (Decker) 305
Steamship (Herbert) 308
Stove, ship's (Slater) 388

O

Trap, air (Sault) 324
Trap, moth (Hearst) 261
Trap, steam (Douglas) 130
Trap, steam (Lapham) 224
Tensuring machine (Dole) 184
Valve, anti-friction (Bristol) 380
Valve, variable cut-off (Buckingham) 327
Valve, water-escape (Douglas) 304
Vise and swivel (Allen) 143
Villa, front elevation of a country (Sauter & Volk) 116
Washing machine, the Shaker (Parker)

P

Watch regulator (Gordon) 64
Watch regulator (Merchon) 300
Windmill, power-accumulating (Lum) 241
Wheel, water (Rose) 168
Wheel, water (Smith) 168
Wrench (Bell) 104

Q

Accident, a singular 185
Advertisements 14, 33, 47, 63, 78, 93, 110, 126, 142, 158, 175, 190, 206, 222, 238, 254, 270, 287, 303, 319, 334, 351, 367, 383, 398
American Institute Fair, machinery department of the late 9
American Institute, Polytechnic Association of the 64, 83, 98, 114, 134, 156, 172, 188, 215, 231, 247, 263, 274, 290, 310, 327, 343, 359, 375, 391, 405
American Institute, the 168
Ammonia, a new method of manufacturing 21
Announcement, an extraordinary 353
Announcement of Scientific Discovery (for 1890), Wells' 118
Appetite, the instinct of 294
Architecture, American naval 131, 132, 214, 258, 274, 329, 333, 374, 412
Architecture, England on, our naval 131
Architecture in the Holy Land 357
Architecture of Great Britain, naval 208, 354
Areometer for determining the real density of liquids, a new 213
"Are you insured?" 54
Astronomers, France on American 150
Astronomy, a chance to make an original observation in 160
Aurora borealis and aurora australis, complete description of the 164
Axes without eyes 378
Banks of the United States, the 117
Beams, strength of wrought iron 74
Bee, the hexagonal cell of the honey 310, 325, 342
Bell for San Francisco, large steel fire 102
Belts for driving machinery 84
Bishop, Ex-commissioner 122, 136
Boiler explosion—rotten iron 37
Boiler incrustations 132, 292
Boiler inspection, city 4, 208, 329
Boilers, horse-power of 99
Boilers and periodicals received, new 318, 364, 392
Bonanza 322
Boreas, the Pacific 179
British Empire, area and population of the 263
Bridges, the obstruction to the navigation of the 277
Building scheme, magnificent 26
Burnings—fire-escape 121
Business, an immense year's 25
Calamity, another awful 240
Calendar, the Lawrence 72, 135
Calculator, the lightning 277
Camera, Melhuish's metal 223
Cannon, manufacture of mammoth 26
Carding machine, the 305
Cattle disease in Massachusetts 277
Cemetery in winter, Greenwood 188
Clocks and watches, American 35
Clouds, dark 1
Coal for locomotives, economy of anthracite 197
Compasses to prevent attraction, arranging 163
Confidence, children's 250
Consumption and its causes 237
Controversy, the dictionary 244
Copper, Lake Superior 339
Copper, New Jersey 244
Compass-rose, interesting 1—
Beams for buildings, iron combination; by B. S., 260 and 245
Beams for drill rooms, iron; by Inquirer and B. S., 181
Bells, repairing cracked; by W. T. & J. G., 275
Bells, driving machinery; by P. and W. B., 194, T. McG., Jr., and D. E. C., 197, Inquirer, 227, and D. I., 337
Bodies falling through the air; by J. W., 305
Boiler explosions, preventing; by T. A., 196, and A. G. S., 273
Boiler incrustations; by J. W. H., 65, M. N. W., 101, and J. L. L., 160
Boys, science among the; by F. G., 214
Bridge, the great Washington aqueduct; by M. C. M., 86
Burning fluid and incensement houses; by M. F., 159
Carling and conching machines; by L. L. R., 222
Cave, a wonderful; by J. W. H., 211
Charlotta drawn by eagles, aerial; S. H. N., 292
Chimneys, curing smoky; by L. L. C., 179
Coal tar for trees; by A. H., M. J. W. M., 84, and F. W. E. and C. F. R., 119
Combustion in a flour mill, spontaneous; by C. D. G., 133
Correspondence, editorial; by —, 365, 298 and 309
Correspondence, our special; by E. M. R., 65, 98, 115, and B., 356, 402
Correspondence, our western; by —, 336
Correspondence, Washington; by Churn 408
Cotton, cause of sanded; by E. J. C., 5
Cure, the; by G. W. C., 167
Egg-hatching machine; by W. J. C., 270, and W. B., Jr., 327
Egg-shell, philosophy in an; by J. W., 335, and R. W., 371
Electricity, plates with iron, coating; by R. W., 29
Engine, a steam and air; by E. R., 371
Engines, steam fire; by G. V. B., 227
Engines, a common error among; by D. S., 135
Fighting on steel; by L. W. A., 245
Fair at Baton Rouge, agricultural; by J. A. D., 68
Files by machinery, cutting; by M. D. W., 180
Fishing-net machine wanted, a cheap; by R. G., 278
Fishing-rod wanted, an improved; by O. W. S., 250
Fire-escapes; by W. H. W., 274
Fuel for steamers, oil; by J. E. H., 67
Fuel in engines, economy of; by W. B. R., 68
Gearing, frictional; by H. F. S., 53
Gin, wanted—a cotton; by L. S. C., 246, J. D. C., 278, H. W. H. and A. J. H., 232, and H., 373
Gizzard, a pipe made in a chicken's; by R. C. N., 295
Guns, the "scattering" of shot; by J. F., 194
Gutta-serena, changes in; by R. U. P., 74
Heat by the earth, radiation and absorption of; by E. R., 116
Heat, latent; by A. F. W., 150
Hose for steam, elastic; by T. A. M., 119
Household conveniences, our modern; by C. M. W., 373
Houses, tenement; by J. A. D., 179
India-rubber, dissolving; by L. W., 29
Invention, a Cuban; by J. D., 371
Inventions, a woman pleads for new; by Mrs. M. L. Varney, 279
Inventions for women; by E. M. R., 338
Inventor sensitive about his name, an; by H. B. H., 345
Inventors, a chance for; by A. J. H., 212
Inventors, a crumb for; by M., 330
Inventors by government, treatment of; by a Subscriber, 327
Inventors, successful; by R. S. S., 74, and J. L., 89
Inventors, telegraph; by G. M. P., 405
Leather, defects of calf-skin; by M., 193
Letters, testimonial; by various persons, 7, 35, 214, 273 and 279
Linen and flax; by O. S. L., 119
Locomotives in South America, trial of; by C. F. P., 245
Locomotives, magnetized wheels of; by L. A. B., 118
Lungs? can particles of matter be inhaled into them; by E. T. C., 227
Manacled, American; by E. H. M., 323
Manure, improving farms without; by G. B., 329
Matches, iceless; by F. F. M., 101
Meteorology in the cellar; by J. W., 228, and W. S. T., 299
Mill-picks, experience in tempering; by F. S. S., 180
Millstones, the use of diamonds for; by H., 194, and J. G., 243
Mill, the Pemberton; by O. B. M., 261
Mills and milling, grist; by W. M., 307, and I. B., 371
Milking by machinery; by L. O. C., 337
Mines, ventilation of; by R. A., 370
Motion, changing; by J. H., 336
Mules, cotton-spinning; by T. W., 295
Mysteries, one of the; by R. J. S., 192
Mystery, a meteoric; by W. D. S., 325
Oil and oil cake, lined; by E. T. C., 228, and W. S. T., 299
Oil for steamers, resin; by H. H. L., 23

R

Patent Office, the United States; by Scribe, 236
Patent rights; by J. W. H., 2
Patent, the force of a re-issued; by F. G. W., 260
Phenomena, curious optical; by E. S. B., 212
Phenomenon, a wonderful natural; by Medicus, 57
Photography, heat in; by W. J. T., 243
Plows, mole; by J. G. H., 198
Plowing in Texas, steam; by D. M. R., 243
Retorts, clay; by Experience, 342
Roofs, construction of; by B. S., 86
Salt-works in Yucatan, rain-water; by L. E., 370
Sawdust satisfactorily, how to burn; by I. H. S., 71, N. D. L., 123, J. L., 230, and J. R., 278
Scale wanted, an improved weighing; by H. F. N., 115
Sewage in cities; by H. L., 163
Sewing by artificial light; by M. M., 99
Ships, history of iron; by W. T. G., 20
Ships, iron and wooden; by J. W. G., 214
Shipwreck, saving life in; by a Careful Reader, 150, and F. A. M., 182
Snakes; by M. C. T., 245
Stars suggested, a new grouping of the; by J. W. P., 240
Steam in cylinders, compression of; by E. B., 373
Steamship, the Winans; by R., 51
Steel in hardening, contraction of; by J. J., 119
Store wanted, a hot-bed; by W. B. W., 349
Stumps, pulling pine; by C. W. D., 371
Tanning, the chemistry of; by W. S. R., 31
Tanning, the profits of; by T. S., 229
Telescopes, American; by J. H. A., 275
Texas, agricultural capacities and climate of western; by D. S. H., 370
Tools, hardening edge; by D. W., 295
Trees, the winding of; by A. C. L., 262
Valve, Douglas's; by F. D., 328
Valves, check; by Archimedes, 261
Well-boring in quicksands and rocks, ancient; by J. T., 69
Wheel experiments at Philadelphia, the water; by O. H. P. P., 211
Willow, American basket; by G. J. C., 258
Wings, adulteration of; by A. S., 227
Wire for telegraph, steel; by W. & M., 229
Cotton trade, the British 193
Countries, size and population of the principal 252
Country-house, the plan of a 116
Currants, cork and raisins in California, cultivation of Dante 98
Daguerrotype, the 299
Dead, burial of the dead 290
Decimal system of weights and measures, the 53
De Quincy, death of 5
Deterioration of the soil, cause of 358
Diamonds, usefulness of 84
Discovers batatas in England 100
Discoveries and inventions abroad 25, 148, 282, 299
Discoveries in Africa, latest 54
Discovery at Rome, remarkable 251
Disease, the cattle 354
Disinfectant, universal 1
Ditches, underground 101
Dye from coal tar, a beautiful 68
Dyspepsia and constipation 287
Electricity, velocity of 225
Electricity, recent discoveries in 256
Electric, vulcanite, solid 112
Engine, glass steam 120
Engine, the anatomy of the steam 203
Engine, the calorific 65, 121
Engines, our steam fire 21
Engines, the work and power of steam 324
Engineering, steam 299
Engineering precedents 57
Engraving on glass 253
Equisetum, a simple apparatus for illustrating the procession of the 200
Extension cases (see Patent extensions)
Fabrics waterproof, rendering textile 403
Factory, fall of a 63
Fences, iron 163
Fire-bricks 90
Fire-extinguisher, a new 390
Fire-escape 198, 240, 244
Food, idiosyncrasies of 15
Forces, the correlation and homogeneity of physical 403
Franklinite metal 18
Friction, Motion on 229, 335
Friends, our 292, 377
Gas-meters 149, 210
Gas, water 261
Garden, zoological and botanical 126, 202
Girders, testing of wrought iron 117
Grape rot, cause and prevention of 286
"Great Eastern" the 7
Green from buckthorn, Chinese 275
Green without arsenic, production of a copper 329
Gold, the purification of 196
Gums, discoveries in the composition of 228
Gut-cotton, 55
Hardware, what we pay to England for 404
Hay as cattle feed, damaged 136
Heat and the steam engine, latent 70
Historical society in New Mexico 261
Horse, nature carrying off a dead 301
Horse, stable management of a 136
Industry—manufactures—commerce 155
171, 186, 203, 215, 235, 266, 267, 299, 323, 363, 390
INFORMATION, CIRCULARS:—
Ball, the motion of a cannon 274
Books, circulation of government 25
Coal, how to burn 71
Cooking by the sun's rays 261
Eyes? can we see our own 243
Improvements, how to make 375
Jinks, receipts for making fancy 29
Invention, the way to manage an 297
Moon, peculiarities of the 323
Pipes by rule and compass, to cut elbows of stove 71
Place, the empty 68
Shades, loss of light by glass 210
Silver in the waters of the sea, the presence of 227
Stars, the way to tell the time of night by the 169
Steel, theory of the constitution of 6
Sue burn the air? does a red-hot 21
Sun-dial, plain directions for making a horizontal 96
Temperature of our bodies is regulated, the way the 59
Tobacco, some statistics of 54
Trees, a personal experience in transplanting 123
Wall, how to see through a brick 235
What ought to be known 274
Instruments, philosophical 211
Invention, an ingenious dental 378
Inventions, American 6
Inventions, foreign (see Discoveries and inventions abroad)
Inventions in Europe, American 246
Inventions to the public, abandonment of 165
Inventions, weekly summary of (American) 11, 26, 41, 68, 75, 90, 107, 122, 135, 154, 170, 187, 202, 219, 234, 250, 267, 282, 298, 315, 331, 346, 368, 378, 394, 409
Inventor, presentation of a gold snuff-box to an 249
Inventors, activity and industry of 317
Inventors, death of 158, 254
Inventor's experience in procuring an English patent, an 273
Inventors in one year, \$37,000 saved to 101
Iron and steel, extensive experiments to test the strength of 117, 180
Iron-making, history of the "hot blast" in 3
Iron-ware, white enameled cast 197
Japanese at the Patent Office, the 260
Japanese Embassy, the 324
Japanese—their proficiency in mechanics, agricultural sciences, &c., the 407
Law, new steamboat 241
LEADERS:
Beams, strength of wrought iron 131
Boiler explosions, Colburn on 245
Bread-making 137
Buildings, defective public 105
Coal, the power of 169
Coloring of nature and art 297
Conductors, electrical 281
Engineering in 1890, steam 25
Fire-escapes 44
Gold, recovering lost 41
Guns, great 328
Lamp improvements, liberal prizes offered for 377
Law that cannot be executed, a 57
Magnets and magnetic attraction 251
Paper-making, improvements in 153
Railroad safety and brakes 59
Retrospect 407
Science and machines, agricultural 165
Science, progressive 5
Ships, wooden and iron 217
Shipping, the growth of our 265
Steamers, the Winans' 73
Steamships, the increase and improvement of 229
Traders and professions, health of 201
Type-setting machines, American 315
Watch manufacture 393
Leather-dealers and the Lynn strikers, the 517
Leather, defects of calf-skin 67, 127, 210
Lectures at New Haven, agricultural 118
Liabilities of companies for accidents 229
Lighting accidents (in 1829) 56
Light, the time 30, 178
Light without heat 278
Lights for lighthouses, electric 280
Locomotives, American and English 74
Locomotives on a "bender," English 74
Macaulay, death of 73
Macaulay's companions in the tomb, 207
Machinery, balancing 395
Machinery for the Amor river, American 170
Manure, drainage of cities for 24
Markets, New York 10, 27, 42, 63, 74, 107, 123, 138, 238, 314
Mason and the "Scientific American," the Hon. Judge 5
Measures, our 177
Metals, the expansion of 255
Mill, a practical inquiry into the cause of the fall of the Pemberton 163
Mill to be re-built, the Pemberton 163
Mineral wealth of Great Britain, 102
Mines and mining in Arizona, copper 39
Mines, explosion in coal 207
Money received, 14, 30, 45, 63, 73, 94, 110, 125, 142, 158, 174, 190, 206, 222, 238, 254, 270, 286, 298, 313, 324, 339, 355, 369, 385, 398, 411
Motion, machinery for changing 70
Museums, public art 106
Mushroom bed, how to make 211
News and markets, foreign 10, 27, 42, 60, 75, 90, 108, 123, 135, 154, 170, 187, 203, 219, 234, 250, 266, 282, 298, 314, 330, 346
"Niagara," the frigate 4

S

* Figures followed by stars refer to illustrated articles.

Notes and queries, 14, 20, 46, 62, 78, 94, 110, 126, 142, 158, 174, 190, 206, 222, 238, 254, 270, 286, 302, 318, 334, 350, 366, 382, 398, 414
 Notices, literary, 14, 20, 46, 62, 78, 94, 110, 126, 142, 158, 174, 190, 206, 222, 238, 254, 270, 286, 302, 318, 334, 350, 366, 382, 398, 414
 Nuisances, city 100

O
 Oil manufacture, coal 3, 130
 Oils, linseed 201
 Orchards, laying out 164

P
 Paper manufacture, an improvement in 260

Park, the New York Central 194, 377

Patent bill, the 297

Patent cases, an important 262

Patent claims, lists of 11, 27, 43, 60, 76, 92, 108, 124, 130, 156, 172, 187, 203, 219, 235, 251, 267, 284, 299, 315, 331, 347, 363, 379, 395, 409

Patent extension case, Morse's telegraph (argument) 290

Patent extensions before Congress, 277

Patent extensions, curious paragraph 233

Patent law case, Cincinnati 104

Patent law, journal of 193, 259, 308, 343

Patent law, the new Canadian 90

Patent law, the proposed changes in the 146

Patent liable to levy and sale on execution? is a 312

Patent licenses and suits, 2

Patent Office report for 1889, the 137

Patent Office reports, 105

Patent suit at Baltimore, important trial of a 170

Patentees, prosperity and gratitude of 149

Patents, applications for the extension of 3, 50, 59, 108, 114, 153, 169, 187, 224, 251, 286, 302, 372

Patents on soap, 2

Patents on the price of manufactured goods, the effect of 144

Patents, recent extensions of 23, 123, 230

Patents, the Senate Committee on 6

Perforation on a wagon brake, 218

Personality, our 5

Philosopher, egg 287

Philosopher and his steel billiard ball, the California 245

Photographic process, new 41

Photographic Society, American 199

Photograph, the philosophy of the 125

Photography at the Patent Office, 7

Photography, progress of 70

Plantation, visit to a cotton 108

"Pier, Fawkes" steam 211

Police, the English 314

Postmaster of New York, defalcation of the 349

Printing in colors, 97

Proceedings in Congress, interesting 234

Progress, our national 403

Pump, self-acting ship's 216

Q
 Quartz-crushing machinery, 169

Quicksilver or mercury, 41

R
 Railroad cars, fresh air in 57

Railroad catastrophes, 50

Railroad collisions, 132

Railroad items, 117

Railroads, county bonds for 229

Railroads, English 90

Railroads for cities, suspended and subterranean 387

Railroads in the United States, progress of 71

Railroads, magnitude of southern 210

Railroads, the value and usefulness of 245

Report of the Commissioner of Patents, annual 130

Report of the Postmaster-general, 10

Report of the Secretary of the Interior, 19

Report of the Secretary of the Treasury, 20

Report of the Secretary of War, 19

Respiration, effect of food upon 166

Retort, removal of carbon from 104, 330

Ry-tan-stone, 9

Ruins in the United States, ancient 307

S
 Salt, Michigan 374

Salt, snow and dirt 167

Schooling, results of practical 38

Science, agricultural 233, 374

Science aiding justice, 323

Science in familiar things, 41

Science, the achievements of 313

Sculpture, 358

Sea in Lower California, wonderful new inland 7

Ship, the Buffalo big 153

Ships and ship-building, American 26

Ships, durability of American 26

Ships, rule for measuring 258

Ships, the abashing of 236

Shipping, life-saving agencies for 100

Shipping of the British Empire, 235

Shipping of the United States, 235

Shipping, our 189

Signs of the times, 163

Silver from injured plated ware, removing 85

Silver, saving nitrate of 230

Skating, the science of 3

Smoke, 281

Sport, novel and exciting 240

Stables at Paris, the imperial 102

Starch, manufacture and uses of 151, 167, 181

Steam expansively, working 217

Steam, ignorance of 121

Steam, the age of 345

Steamer "Adriatic," the 123

Steamer "Seth Green," the 106

Steamers, the Japanese 290

Steamers in the Pacific, English 6

Steamers, death of Hon. Charles 217

Stereoscopes for amateurs, 261

Substances, polishing 284

Sugar, 494

Sugar cane, cattle feed, Chinese 52

Swindles, alleged Yankee 101

T
 Tanning, the art of 22

Tanning in some materials, amount of 2

Tanning, the profits of 219

Teeth, artificial 241

Teeth, plastic fillings for 298

Telegraph, American police and fire-alarm 298

Telegraph line, the North Atlantic 18

Telegraph operations, New York 372

Telegraphy, modern 287

Timber for ship-building, American 85

Tin plates, manufacture of 279

Traders and manufacturers, the dishonesty of English 344

Tractor strikes, the evils of 84, 185

Trial, Howe's sewing machine 214, 249

Tunnel, the Hoosick 161

V
 Vacuum pan in the world, the largest 345

Varieties, a column of 7, 25, 35, 51, 77, 103, 119, 135, 151, 167, 183, 199, 215, 231, 247, 263, 279, 295, 311, 327, 343, 359, 375, 391, 407

Vegetables, early 148

Violins, 113

W
 Washington, interesting from 281

Water purified from lead, 18, 355

Water, the power of 125, 194

Water-works, new plan for tide-mill 374

Wax—its uses and colors 116

Welding at a single blow, 90

Wheel experiments in Philadelphia, the result of the 287

Wheels, feathering paddle 243

Willow, American basket 153

Wine trade, tricks of the 87

Y
 Yellow, a new chrome 10

PATENT CLAIMS.

A
 Acoustic apparatus 141

Adding machines 263, 300

Air pumps (see Pumps)

Ash-sifters (see Coal-sifters)

Alarm, burglar's 297, 409

Alarm, fire 173

Alarm for drawers 61

Amalgamators, gold 24, 124, 300, 318

Anchor-tripper 60

Andirons 236

Apple-grinder 11

Apple-grinding machine 93

Augers 29, 298, 365, 409

Awls, shoemakers' 284

Axes, manufacture of 157, 268

Axis boxes (see Boxes)

Axles, car or carriage 219, 299, 300

Axles, lubricating 268

B
 Bag-cutters, paper 220, 333, 381

Bag-holder 124

Bag, traveling 301

Balance, compensating spring 233

Balance, hydrostatic 61

Ballot-box, 263

Bands, fastenings for bale 237, 270, 315, 317, 323

Banks for machinery, 262

Bank-notes, photographic 140

Barometers, 270, 297

Barrel, gun 220

Barrel heads (see Stave machines)

Bars, musculet (see Nets)

Basket 217

Battery, voltaic gas 349

Bearings, pivot 45

Bed bottoms, 28, 44, 92, 251, 262, 324

Bedcord-tightener, 269

Bedstead-fastener, 93, 348, 349

Bedstead, ventilating 93

Bedsteads, 24 (D), 173 (D), 178, 231, 317, 325, 327

Bedsteads and sofas (combined) 157, 379

Bedstead, invalid 44, 141, 342

Beehives, 26, 109, 140, 183, 300, 347

Bellows, 125, 285

Bell-pull 173

Bells, hanging 254, 306

Belt-fastenings, 12, 301

Belt, caoutchouc 12, 13, 28 (D), 44, 108, 109, 125, 294, 305, 323

Belt, machine 109

Belt, trip-hammer 269

Belts, attaching scabbards to 93

Bending machines, metal 173, 198, 294

Bending machines, wood 125, 221 (D), 337, 316

Bill-of-fare, 223

Blankets for printing, 11

Bleaching grain by sulphurous acid, 254

Blind operators, 146, 172, 230

Blocks, pulley 236

Boilers, 77, 108, 139

Boats, 4

Boats, surf life 198

Boats, suspending 279, 397

Boiler, locomotive 351

Boiler-plates, riveting 77

Boilers, feed-water apparatus for 77, 172, 304, 322, 327, 353, 390, 390 (D), 348, 410

Boilers for preparing paper stuff, 316

Boilers, sediment collector for 349

Boilers, steam 45, 61 (D), 157, 269 (D), 295 (D), 301, 345, 450, 410

Bolt, door 12, 135, 263

Bolt for car seats, 333

Bolting chest, 409

Bolts, heading 295

Bone-black, apparatus for revivifying 204

Bonnets, 316

Bookbinding, 391

Book-ruler, 204

Boo-crushing machines, 221 (D)

Boo and shoe heels, 45, 198, 252, 296

Boots and shoes, cutting vamps for 141

Boots and shoes, edge-planes for 349

Boots and shoes, filling for the soles of 345

Boots and shoes, machines for attaching and finishing heels of 109

Boots and shoes, machine for burnishing the edges of the soles of 333

Boots and shoes, machine for skiving counters for 280

Boots and shoes, manufacture of 61

Boots and shoes, overshoes and 235

Boots and shoes, soles for 22, 150, 316

Boots and shoes, sole-cutting machines for 140, 173, 304

Boots and shoes, tip for 264

Boring apparatus or implements, artisan well (see Well-boring apparatus)

Boring machines, brush block 61, 109

Boring machines, best motion for 140

Bosom-expander, 223

Box, core 266

Box for porter bottles, 297

Box, tin 267

Boxes, anti-friction 12, 223

Boxes, axle, 44 (D), 172, 253, 223, 346

Boxes, crank 221

Boxes, drop-letter 204

Boxes for candle molds, 233

Boxes for printing, roller 291

Boxes, journal 60, 226, 217

Boxes, machine for making wood 301

Bracket fastening, 173

- J**
Jacks, 205, 247
Jacks, carriage or wagon 220
Jacks, railroad 248
Jail, iron plate 12
Jewelry 44
Journals, boxes (see Boxes)
Journals, lubricating 203
Joints for drop-lights 295
Joints for tubes 273
- K**
Kettles, ears for 233
Key and calendar, watch (combined) 60
Key, piano 123
Keys 179 (2)
Keyholes, guards for 361
Key-seats, machine for cutting 297
Kiln, floor of malt 157
Knife-cleaners 205, 267
Knife, currying 329
Knife handle (see Cutlery)
Knife-sharpeners 120, 265, 316
Knitting machines 141, 204, 318, 348 (2)
- L**
Labels for mail bags 201
Ladders, extension 268, 301
Ladle for bullets 501
Lamp-lighting device 95
Lamps, 60, 92 (2), 93, 140, 157, 205, 318, 333, 400, 410 (2)
Lamps, vapor (see Vapor apparatus)
Lantern-carrier 173
Lanterns 141, 173, 205, 237, 294, 295, 279
Lap-winding machinery 243
Lard-expressor 92
Last-holder 157
Lathing machines 317
Latches for gates and sliding doors 60, 61, 253
Lathes, back-rests for 100 (2)
Lathes, centering chuck for 222
Lathes, operating feed nuts in 140
Lathes, turning 141, 205, 322, 349
Leather goods, waterproof 172
Leather, machines for cutting or finishing 61, 90, 108, 124, 125, 172, 284, 317, 330, 349 (2), 358
Leather, machines for stretching 245
Leg, artificial 60
Lenses, field 300
Level and square (combined) spirit 94
Level, spirit 217
Level, surveyor's 60
Life-preserver 128
Lighting rods, insulating and supporting 300
Light, vault 11
Lining for boom jaws 337
Liniment, anti-rheumatic 189
Liquid for fluid gas-meters 297
Liquors, apparatus for preserving and discharging malt 93
Lock, alarm 259
Lock and label sheath (combined) 253
Lock-cutting machine, hoop 155
Lock, door 317
Lock for cars, scaling 230
Lock for umbrella-stands 124
Lock, permutation 155
Lock, trunk 34
Locks 28, 44, 158, 172, 200, 323, 360, 410
Locks, carpet bag 94, 315
Locks, hoop 45, 232, 364
Looking-glasses (see Mirrors)
Looking, power 77, 140, 172, 269, 294, 317, 318, 345, 370
Loupes, machine 334, 364
Lubricating compounds 45, 220
- M**
Magnet-electric machine 27
Manger 269
Mangle 294
Marble, artificial 110
Marble-carving machines (see Stone-sawing and dressing machines)
Mast-scraper 13
Mat, table 63
Mattress, ventilating spring 237
Measure, beer 61
Measuring apparatus for liquids 295, 410
Meat-cutters or choppers 61, 173, 331, 364
Metal-benders (see Bending machines)
Metal-cutting machine 301
Metal plates, joining 157
Metal, machine for forming cornices of sheet 439
Metals, coloring 108
Metals, embossing designs on 205
Metals, rolling corrugated 29
Metallographic operations 232
Meter, water 140
Meters, gas 221, 260
Mill, cider, 60, 337
Mill, coffee 124
Mill, collecting toll from grit 221
Mill, flour 60
Mill, grain 157
Mill, gunpowder, 90
Mill, snout 141
Mills, attaching grinding surfaces to quartz 232
Mills, bark 281, 305
Mills, grinding 48, 63, 120, 141, 157 (2), 231, 232, 265, 408, 410
Mills, hominy 92, 316
Mills, plates for 354
Mills, sugar (see Cane-crushing machines)
Millstone bush 222
Millstone-picking machine 92, 298
Millstones, cementing 216
Millstones, dressing 33, 230, 363, 365
Millstones, hanging 364, 381
Mirrors, 259
Moldboard machine for plows 290
Molds for casting, blackwashing 204, 206
Molds for cement pipes 232
Molds for jars 297
Molds for metal dies used by dentists 263
Molds, glass 270
Molding pipes 12, 343
Molding shot and shells 248
Molding for large castings, 348
Molding for hanging pictures 232
Molding, machines for cutting 61, 153, 284, 293
Molding machines for enameling 301
Mop and scrubber (combined) 188
Mop-wringer 348
Mortaring machines 100, 140, 169, 264
Mosaics, wooden 26, 290
Motion, machinery for changing 45, 123, 172, 232, 263
Motor, hydraulic 248
Movement, mechanical 249
Mowing machines 61, 141, 276, 316, 297
- N**
Nail machines 120, 327
Nail plate-feeders 12, 173
Needle case 261
Needle guard 268
Needle-threading mechanism 263
Nets, mosquito 129, 157
Newspapers, addressing 13, 76 (2), 231, 315
- O**
Notes, manufacture of bank 200
Nozzles, hose-pipe 160
Nut-crackers 22, 349
- P**
Odometer 221
Oil, apparatus for distilling coal 172, 222, 267, 289, 347, 352, 370 (2)
Oil, cotton seed 77
Oil, process of distilling hydro-carbon 267, 409
Oil, siccative 95
Ordinance, breech-loading 380
Ore-washer 204
Ore-heating apparatus 301
Orthography, apparatus for teaching 156
Oven, 318
Overboiler (see Boilers and shoes)
Ore-shoe 233
Ox-yoke fastening 264
- P**
Padlock 254
Pad, harness 200
Pad, medicated 45
Paint-mixing machines 249, 266
Paper-cutting machine 12
Paper-feeding apparatus 60
Paper-folding and pasting machine 180
Paper for bookbinders, mode of folding 141
Paper pulp, preparation of 221, 257, 322
Paper, safety 264
Pauzometer 70
Pastry-board 169
Pavements, making 267
Peach-parsers 29, 249
Pegging machines 100, 125, 363
Pen and pencil cases, holders or stands for 128, 173, 252, 267, 409
Pensaries 92, 305, 380
Photographs, solution for toning 125
Piano-forte actions 12, 92, 363, 364
Pianofortes, 15, 18, 157, 264, 318
Picture, backing-up glass 45
Pin, coated iron 77
Pins, scarf 205, 220
Pintola, repeating 13
Pitcher, beer 284
Pitcher, ice 316
Plaiting (sewing) apparatus 124
Plane, bench 300
Planing machine 92
Plant-cutting machine, cotton
Planters, corn 43, 44, 45, 62, 188 (2), 335, 368, 315 (2), 317, 363, 364 (2), 366, 360 (2), 396, 397, 410
Planters, cotton seed 28 (2), 139 (2), 210, 220, 315, 297
Planters, seed 28, 141, 172, 187, 237, 265, 349, 364, 306 (2)
Plants, treatment of fibrous 319
Plastic compound 157
Plate, screw 245
Plate, table 410
Plow, cotton-thinning 200
Plow, gang 28
Plow, shovel 187, 380
Plow, steam 157
Plow, 28, 29 (2), 44, 45, 76, 108, 139 (2), 141, 172, 205, 296 (2), 337, 338, 388 (2), 307, 316, 332, 334, 349 (2), 363, 364, 365 (2), 397 (2), 410
Plows, mole or drain 60, 157, 173 (2), 222, 229 (2), 251, 264, 409
Plow, seedling 267, 300
Pocket-irons for billiard tables 317
Polishing machine, marble 200
Polishing machine, wood 285
Pots, butt for 248
Pot, flower 77
Pot, glue 94
Pots, coffee or tea 92, 98, 198
Potato-diggers 233, 334, 349, 363
Powder, beer 245
Power, adaptation of substances as motive 221
Plug-finishing machine 189
Press, apron for printing 77
Press, brick 140
Press, cane 279
Press, cheese 229
Press for billiard cues 120
Press, laundry 140
Press, letter-copying 301
Presses 45, 77, 140
Presses, cotton or hay 20, 60 (2), 98, 182, 204 (2), 221, 217, 348, 365 (2), 386
Presses, hydraulic 33, 339
Presses, printing 12, 60, 76, 77, 160, 156, 390
Presses, tobacco 236, 264, 265
Projectile for fire-arms 92, 140, 157, 316
Propellers, marine 141, 230, 331, 410
Propellers, applying steam to 333
Prussian blue, manufacture of 262, 409
Pruner, cutting 260
Pulley, grooved 45
Pulley-facing machine 61
Pulley for gates 231
Pulmonometer 30
Pulverizers, quartz 27, 222, 238, 332, 350, 401
- Q**
Quartz-crushers (see Pulverizers)
- R**
Rack for cigars, hat 201
Rack for milk pans 45
Racks, pen 45, 172
Radiator, heat 285, 410
Raffia, life-preserving 75, 231
Rails and wheels, testing the wear of railroads 12
Ralls for railroads 12, 204, 200, 216
Rakes, horse hay 25, 160, 186, 187, 267, 300, 293
Ranger, (see Stoves, cooking)
Rotary machine 280
Reaping and mowing machines (combined) 108, 124, 230, 236, 245
Reed, musical 316
Reel, fishing 173
Reel, silk or thread 249
Reflector, night-light 290, 294
Refrigerators, 45, 157, 231
Register, hot-air 204
Register, legislative voting 253
Register, portable 29
Register, store 61
Registers, railroad car 28, 237
Regulator, boiler 317
Regulator, gas 287, 410
Regulator, steam and fire 180
Reins, bridle 265
- R**
Reservoir for pens, ink 234
Resin, manufacture of 236, 237
Retorts, coal 46, 220
Retorts, gas 140, 204, 220, 265, 381
Road-scraper 45
Roll for forming screw wrenches 332
Roller for sugar mills, crushing 270
Roller for window sashes 76
Roller for working caoutchouc and allied gums 141
Roofing, board 270
Roofs, laying slate 268
Rope-making machines 77, 92
Rubber articles 12, 13, 77
Rubber goods, finishing felt 45, 265
Rubber, restoring waste vulcanized 269
Rudders 108, 140
Ruffle 334
Rig for reefing fore-and-aft sails 60, 77, 93, 173
Rice-hulling and finishing machine 156, 329
Rivet and bolt machine 157
Rule for pointers, perforating 216
Ruling machine 46
- S**
Saddles 296, 232, 299
Safes 220, 300, 379
Safe, match 44, 77
Sail bonnets 93
Sail cringles 157
Sail gronometer 109
Sails of fore-and-aft vessels, main 364
Sails, securing reef points of 366
Salinometer and water gauge (combined) 219
Salt, manufacture of common 250
Sap conductor 77
Sash-fasteners 349, 380
Sash, metallic 301
Sashes, window 300, 348
Sausage-fillers or stuffers 156, 203, 221, 383, 299 (2), 347, 359
Saw-filers (see Filing devices)
Saw-grinding and polishing machine 157
Saw blades, device for allowing for contraction or expansion of 157
Saw handles, fastening 172, 189
Saw law, roasting 135
Sawmills or sawing machines 26, 60, 109, 110, 125, 300
Saw-set 247
Saw, construction of 220, 226, 268, 280, 345
Saws, hanging reciprocating 76, 333
Sawbards, bayonet 322, 348
Scaffolding 76, 268
Scales 231
Scales, grain 232, 290, 334, 245, 306
Scales, platform 13 (2)
Scales, 242, 363
Scissors and nippers (combined) 305
Screw and nut, anti-friction (combined) 297
Screw-cutting machine 140
Screw, wood 12
Screw, tobacco (see Presses, tobacco)
Screens, coal (see Coal-sifters)
Screens for cleaning cotton, wire 92
Screens, window 205
Scent and cane (combined) 43
Seed-sowers or seeding machines 27, 29 (2), 45, 60, 141, 172, 173, 188 (2), 236, 237 (2), 222, 235 (2), 297, 270, 299, 301, 328, 363 (2), 344, 294, 336
Separators, gold 61, 124
Separators, grain 141, 172, 203, 284, 285 (2), 301, 315, 409
Sewing machines 12, 13 (2), 27, 28, 29, 45, 62, 123 (2), 141, 156 (2), 187, 172, 199 (2), 220, 221 (2), 232, 233, 270, 285 (2), 317, 331 (2), 332, 348, 364, 370, 381, 297 (2), 409
Sewing-stand, embroidery 315
Sextant 254
Shackle for wagon shafts 217
Shackle, second anchor 44
Shade fixture 76
Shaft, counter 263
Shavings, machine for cutting 61
Shear-holder, linears 169
Shears (see Scissors)
Shield, photographic plate 172
Shingle machines 15, 126, 142, 172, 220, 232, 232, 358, 410
Ships, buying 17
Ships, construction of 172, 173
Shirred goods 44
Shoe-wiper 297
Shoes and gutters 12
Shoe-binder, corn 301
Shoelace fastening 92
Shoe-pedgers (see Pegging machines)
Shoe-plate 333
Shovel 249
Shovel and tongs (combined) 348
Shutter-fasteners and operators 108, 168, 264, 221
Shutters, metallic 125, 343
Signal apparatus 250
Silicates, preparation of soluble 281 (2)
Sinks, fitting 230
Siphon 252
Skates and skate fastenings 13 (2), 61, 92, 108, 125, 140, 141, 142, 166, 167, 201, 380 (2)
Skimmers, sugar juice 157
Skirts, skeleton 15, 77, 266
Slate, artificial 93
Slate, school 93
Slat machine, window-blind 300
Sled, portable 141
Silver machine 279
Sluices for mill races, floating 233
Smoke, apparatus for the combustion of 350
Smut machine 317
Snow or ice, treatment of 349
Soap, manufacture of 45, 77, 265, 222
Socket, clear-heading 205
Sole-breaking machine 279
Soles and sole-cutting machines (see Boots and shoes)
Spark-extinguisher 268
Spectacles 189
Spiral curvature, apparatus for relieving 29
Spindles and flyers 29
Spindles, mill 109, 189
Spinning frames 61 (2)
Spinning machinery 204
Spring, belted 34
Springs, car 45, 92, 149, 221, 234, 297, 410
Springs, carriage 44, 108, 134, 230
Springs, machine for covering 204
Springs, tempering steel 297
Spur, heel 118
Stamp, post-office 142
Stamping machine, stone 253
Stamping-cleaning machinery 249
Starch machines 12, 40, 141, 239, 157, 251, 410 (2)
Steam, apparatus for decomposing 108
Steam, apparatus for re-working waste 230
Steam, apparatuses for superheating 45, 109
- Steel, manufacture of 46, 110, 252**
Steering apparatuses 44, 157, 172, 270
Stereoscopic apparatuses or instruments 12, 93
Stitching (sewing) 92, 298, 300
Stock, neck 410
Stone-breaking and crushing machines 264, 201
Stonesawing and dressing machines 61, 299
Stool, camp 265
Stop-cocks (see Cocks)
Stove-making machines 222
Stove, ship 18
Stoves 12, 23, 60, 92, 128, 265, 201, 232, 268, 281
Stoves and ranges, cooking 92, 134, 160 (2), 189, 254, 219, 233, 316, 317, 409
Straw-cutters 27, 28, 29, 44, 76, 109, 141, 265, 252, 255, 316
Strap-cutting, boot 13
Straps for securing thills 125
Straps, razor 173
Street-sweeping machines 205, 200
Strips for doors, weather 220
Stump 140, 299
Stuffing box for revolving rolls, steam 409
Stump extractors 12, 188, 284, 285
Sugar-cutting or crushing apparatuses, 108, 140, 252, 255, 316
Sugar-drying machine 233
Sugar-holder and distributor 262
Sugar juices, defeating (see Cane)
Sulphate and oxides of copper 28
Sulphuric acid, making 25, 409
Supporter for mechanics' use, staging 265
Supporters, shirt 11, 12
Supporter, table-leaf 110
Supporters, window-sash 44, 77, 124, 268, 285, 290
Surfaces for grinding or abrading, use of Franklinite pig metal in making 217
Surveying instrument 29
Swiss, portable 201
Switches, railroad 44, 60, 109, 125, 205
Syringes 222, 333
- T**
Table, secretary 140
Tanning processes or apparatuses 61, 108, 125, 140, 157, 220, 237, 269 (2), 290
Tape, measuring 317
Tap, screw 12
Tassel, window curtain 221
Teeth, fastening artificial 251
Telegraphing apparatuses, electric 25, 108, 245, 316
Telegraph, magnetic printing 227
Temple 301
Thermometer, air and mercurial 106
Thermal 173
Thills (see Vehicles)
Thread and yarn, manufacture of 294
Thread-spooling machine 109
Threshing machine 317
Tickets, printing railroad 219
Ties for cotton bales, iron (see Bands)
Tie machines, drain 61, 237, 315
Tiler, ship 44
Time-table for railroads 140
Tin-ware machine 77
Tip, shoe 225
Tip, bending or upsetting machines 140, 221, 268, 269, 270, 284, 411
Tobacco machine 29
Tobacco, preparations of 28
Tombstone, 301
Tool, cloth 285
Tool for cutting and pulling thread 157
Tool for cutting round tenons 62
Tool for forming the necks and orifices of glass bottles 173
Tool for laying and stretching carpets 49
Tool for mitering printers' rule 270
Tool for opening barrels 233
Tools, mortising 60, 268
Topical applications, apparatus for medical 44
Topmasts, attaching yards to 204, 365
Torches 295, 409
Trap, air 173
Trap, water 13
Traps, animal 92, 100, 135 (2), 220
Traps, rat 12, 98, 135
Traps, steam 98, 124, 236, 264
Traps, felling 24
Troughs, machines for making cove 257, 284
Truck for fire-ladders 268
Trunk, hand 301
Trunk, hernial 29
Tube, flexible gas 409
Tubing, hose 221, 268, 234, 264, 265
Tufed-work, manufacture of 140
Tumbler-cleaning apparatus 172
Tunnel, tubular submarine 44
Turnip machine 39
Twears 125, 349
Twine-holder 189
Type-setting machine 279
Typography 410
- U**
Utensil, cooking 140
- V**
Valve-chest for hydraulic mining 45
Valve for liquids, ventilating 157
Valve for pumps 254
Valve, stop 268
Valve, vacuum 316
Valves and valve-gearing for steam engines 11, 44, 92, 109, 141, 172, 189 (2), 190, 204 (2), 221, 232, 267, 285, 316, 317 (2), 332, 347, 355, 397, 410
Valves for hydrants, 264
Valves for water-closets 44, 220
Vapor apparatus, hydro-carbon 12, 43, 44, 92, 108, 125, 142, 154, 172 (2), 197, 205, 221, 222, 232, 244, 314, 331, 347, 349 (2), 360, 370, 380, 281, 409, 410
Vapor apparatus, medical 44
Varnishes 220, 299
Vegetable-cutters 45 (2), 265 (2)
Vehicle for running on ice or water, locomotive 94
Vehicle, locomotive traction 11
Vehicles, attaching thills or whiffletrees to 77, 93 (2), 126, 129, 221 (2), 253, 269
Veneering machines 27, 29, 173, 205, 284, 299
Ventilating apparatus for railroad cars 156, 364
Ventilator for sinks 60
Ventilator for windows 93
Ventilators 108, 156, 189
Ventilators, hot 225, 263
Vessels (see Ships)
Vise and saw-set (combined) 27
Vise, engraver's 157
Vises, bench 230, 384
- W**
Washboards 268 (2), 297
Washer 12
Washing machines 28, 46, 61, 100, 134, 157, 172, 188, 189, 220, 221, 257, 268, 290 (2), 270, 285, 301, 322, 333, 348, 366 (2), 368, 281, 291, 298, 409
Wagon, dumping 338
Wagon, stone-loading 11
Wagons, top for 12
Walls, apparatus for building concrete 252, 289, 316
Ware, porous 29
Warming apparatus (see Heating apparatus)
Watches 28, 45, 172
Water apparatus for boilers, low 219
Water-lack for ranges 217
Water-closets 72, 98, 109
Water-exPELLING apparatus (ship) 140
Water-raising devices 77 (2), 110, 136, 189, 253, 267, 268, 281
Water-regulating device 297
Wax substitute for 45
Weaving circular forms 23
Weighing apparatus 60
Weights, clock 251
Weights, apparatus for moving heavy 225
Well-boring apparatus, artesian 172, 265
Wheel guard, carriage 203
Wheel, spinning 125
Wheel, "flying artillery" carriage 238
Wheel, locomotive guide 300
Wheel, paddle 108, 206, 236, 268, 410
Wheels, railroad car 63, 141, 290
Wheels, water 46, 76, 93, 124, 157, 204, 221, 297, 316, 318, 348, 397, 410
Wheels, wind 172, 303
Whiffletrees (see Vehicles)
Windlass 331, 410
Windmills 28, 265, 217, 265
Wind-blinds (see Blinds)
Wire, telegraph 268
Wood-benders (see Bending machines)
Wood-bundling machines 334
Wood, preparing and molding 249
Wooden-ware, machine for making 268
Wood-polishers (see Polishing machines)
Wood-slicing machine 222
Wood-burring machinery 60, 379
Wrenches 11, 98, 125, 236, 315, 340, 409
Wringing machines (see Clothes-wringers)
- Y**
Yarn, manufacture of 109, 232, 233
- Z**
Zinc, apparatus for manufacturing oxyd of 140

EXTENSIONS.

- Boiler, steam 29
Comb-dressing machinery 13
Curry-comb 296
Dredging machine 296
Dry-body machinery 94
Kettles, tea 265
Lock, door 254
Mattress 46
Pan, sugar 366
Presses, checking the momentum of printing 254
Register for stoves 270
Sawmill 264
Screw machines, feeder for 207
Screw, machinery for manufacturing wood 281
Stove, cooking 411
Telegraph, electro-magnetic 266
RE-REMARKS.
Alarm for boiler 238
Alarms, burglar's 190, 265
Bags, machine for making paper 190
Baths, machines for contracting the circumference of wrought iron 94 (2)
Bonnet-pressing machine 237
Bed bottoms 77, 206
Bells, hanging 318
Carriage for sugar molds 281
Caster, table 29
Casting boxes for wheel hubs 215
Chain machine 296
Chair, railroad 190
Cocks, stop 18
Coffee 159
Composition for preventing incrustation of steam boilers 350
Corn-husker 250
Corn-sheller 411
Coupling for cars, pole 158
Curtain fixtures 268
Engines, steam 158 (2)
Evaporating pans or apparatus 15, 29
Excavator, manure 253
Flannels 158
Firewood, machine for splitting 13
Frame, bonnet 250
Frame for ladies' dresses 126
Frog for railroads 158
Furnace, air-heating 287
Furnace for evaporating sugar juices 223
Gas, illuminating 238
Grass-cutting machines 298 (2)
Hair-brush handles, machine for finishing 77
Harvesters 46 (2), 228, 218 (2), 266, 286 (2)
Hats, ventilation of 305
Heating or cooking apparatus, gas 281
Horse-power 142
Hose pipe, coating for 268
Kettles, grinding the inner surfaces of 218
Kuiting machines 129 (2), 205, 350
Leather goods, waterproof 350
Life-preserver 126
Machines, constructing 270
Mowing machine 158
Moldings, machine for enameling 264
Mill, flouring 206
NCT machines 158 (2)
Paper-folding machine 254
Pavement, cellular iron 318
Piles for wharves, staying 190
Planing machine 286
Pulverizer, quartz 411
Quartz-crusher (see Pulverizer)
Reaping machine 174
Reaping and mowing machines (combined) 129 (2), 206 (2)
Reflector, night-light 411
Regulator, gas 222
Roof, machine for seaming sheet metal 264
Steering apparatus 411
Stereoscopic pictures, apparatus for exhibiting 110
Sitch 174
Stoves and ranges, cooking 22, 318
Stoves, coal 270, 334
Straw-cutting 253
Sugar-cutting machine, loaf 318
Switches on railroads, dispensing with 254
Timesecpers, regulator for 126
Valves and valve gearing for steam engines 125, 190
Washing machine 77
Water-closet 411

